



## Current Affairs of the Day

- Army builds extreme weather habitats for troops in Ladakh
- Kerala to commission genome survey for SARS-CoV-2 (go into basics)
- Finance panel for PPPs on health infra
- Thriving in a crowd



## Army builds extreme weather habitats for troops in Ladakh

### GS III: Security Challenges and Their Management in Border Areas

**Context:** As India and China continue deliberations on a proposed disengagement and de-escalation plan to end the stand-off in eastern Ladakh, the Army has completed building extreme weather habitats for thousands of additional troops to remain deployed through the harsh winter.

**Tough task** The Army has created modern habitats for troops deployed in Ladakh during the winter season. A look at the conditions faced by the soldiers

- **Altitude:** 14,000 feet to 18,000 feet
- **Temperature:** Minus 40 degrees Celsius, coupled with the wind chill factor
- **Snowfall:** Up to 40 feet from December onwards
- Road access to front-line areas remain cut off from November to May

The state of the art habitats come with integrated arrangements for electricity, water, heating facilities, health and hygiene



**Shelter upgrade:** Exterior and interior of the habitats set up for the troops in Ladakh.  
▪ SPECIAL ARRANGEMENT

### Highlights:

1. In order to ensure the operational efficiency of the troops deployed in winters, the Army has completed the establishment of habitat facilities for all the troops deployed in the sector.
2. Apart from the smart camps with integrated facilities, which have been built over the years, additional state of the art habitats with integrated arrangements for electricity, water, heating facilities, health and hygiene have been recently created.
3. The troops on the front line were accommodated in heated tents as per tactical considerations of their deployment, the source said.



4. The altitude in Ladakh where troops are deployed ranges from 14,000 feet to 18,000 feet and the area experiences up to 40 feet of snowfall from December onwards. Coupled with the wind chill factor, the temperature dips to minus 40 degrees Celsius, disrupting road access to the area for some time.
5. The Army has deployed thousands of additional troops and equipment in eastern Ladakh and along the Line of Actual Control (LAC) since the stand-off began in early May.
6. The Army recently procured 15,000 extreme weather clothing from the U.S. under the bilateral logistics pact, Logistics Exchange Memorandum of Understanding, for the additional troops in Ladakh.

## Kerala to commission a genome survey for SARS-CoV-2

### GS III: Science and Technology- Developments and their Applications and Effects in Everyday Life.

To better understand the genomic variation in the strains of SARS-CoV-2 in the State, the Kerala government has tied up with the CSIR-Institute of Genomics and Integrative Biology (IGIB) for a survey.

#### Highlights:

1. The study, commissioned on November 11, will collect 100 samples from 14 districts every month, for three months.
2. The exercise is a follow-up of a pilot study that the same group of scientists did in Kozhikode, from which it emerged that outbreaks in the State were less due to international expatriates and more due to reduced monitoring of inter-State movement once the restrictions were eased.

#### 'NextGen' sequencing

The genome sequencing uses an approach called 'NextGen' sequencing, in which 1000s of individual genomes can be simultaneously analysed, rare variations picked up and occasionally, SARS-CoV-2 missed by the gold standard RT-PCR test, detected.



This could demonstrate the utility in identifying apparently unconnected outbreaks and evidence to design or validate policy interventions—like strict quarantine of foreign travellers.

## Domestic problems

Kerala recorded the first cases of COVID-19 in India, and for several months managed to contain the transmission to limited pockets. However, with the easing of restrictions and Onam festivities, congregations multiplied and led to huge spikes in cases. Kerala had about 87,000 active cases as of Wednesday but has confirmed only 884 deaths so far.

## Used in the U.K., Australia

The United Kingdom and Australia have employed genome sequencing to map the outbreaks. The earlier pilot study had found that virus samples sequenced from Kerala belonged to the A2a clade (a strain of coronavirus), which is predominant in India, within which there were three clusters. The largest one had genomes from Odisha; the second cluster's ancestry was traced to Maharashtra and the third from Karnataka.

## Background:

### Genome Sequencing

Genome sequencing is figuring out the order of DNA nucleotides, or bases, in a genome—the order of As, Cs, Gs, and Ts that make up an organism's DNA. The human genome is made up of over 3 billion of these genetic letters.

Today, DNA sequencing on a large scale—the scale necessary for ambitious projects such as sequencing an entire genome—is mostly done by high-tech machines. Much as your eye scans a sequence of letters to read a sentence, these machines "read" a sequence of DNA bases.

A DNA sequence that has been translated from life's chemical alphabet into our alphabet of written letters might look like this:

AGTCCGCGAATACAGGCTCGGT



That is, in this particular piece of DNA, an adenine (A) is followed by a guanine (G), which is followed by thymine (T), which in turn is followed by a cytosine (C), another cytosine (C), and so on.

## Using whole-genome sequencing to help combat COVID-19

Whole-genome sequencing (WGS) provides the highest possible resolution information about an organism's genome and has the potential to transform infectious disease management. By analysing differences in the genetic code of viruses from different patients, the consortium aims to map the spread of the virus in real-time, tracking new mutations to identify if different strains are emerging. A better understanding of the genetic makeup of the virus could ultimately save lives by informing strategies for public health and clinical care, as well as facilitating the design of therapies and vaccines to combat the virus.

### How is WGS useful?

#### 1. Understand the transmission of the virus

Understanding changes in the genetic sequence of the viral genomes collected from different patients allows researchers to build a viral 'family tree' and contribute to efforts to monitor disease spread within and between populations over time. This can help with identification of infection 'hot spots', or of super spreaders – individuals who transmit the infection to a larger than expected number of people. This information is valuable for planning targeted public health interventions to reduce disease spread.

#### 2. Design treatments and vaccines

Understanding the viral DNA sequence will assist researchers in designing therapies and vaccines that target specific features of the virus. It will also allow a better understanding of how therapy and vaccine effectiveness might change as the virus evolves.

#### 3. Monitor viral evolution

Continually tracking the virus will alert researchers to genetic changes that might give rise to less virulent or more virulent strains. Early warning of a more virulent virus or the emergence of treatment resistance will be vital to support measures to minimise disease spread and for designing new treatments and vaccines.



## 4. Prepare for the future

The infrastructure and protocols that are created through this project, as well as the data produced, will be highly informative when responding to future pathogen outbreaks in the most efficient and effective manner possible.

### Mains:

1. What is genome sequencing? How can it be used in mapping and planning to stop pandemics like COVID-19?

## Finance panel for PPPs on health infra

**GS II: Issues Relating to Development and Management of Social Sector/Services relating to Health, Education, Human Resources.**

### Inadequate spending

The table lists the three States/Union Territories with the highest and lowest per capita public expenditure on health-care, respectively according to FY20 (budget estimates)

#### STATES SPENDING THE MOST

State/U.T.	Per capita public expenditure on healthcare
Delhi	₹3,808
Himachal Pradesh	₹3,780
Jammu and Kashmir	₹3,163

#### STATES SPENDING THE LEAST

Bihar	₹781
West Bengal	₹988
Uttar Pradesh	₹1,065

Source: RBI | Northeastern States excluding Assam spent ₹3,717 per capita on healthcare

**Bottom line:** Spending by the Centre and the States needs to go up very significantly in the sector, it says

### Highlights:

1. The 15th Finance Commission has mooted a greater role for public-private partnerships to ramp up health infrastructure and scale up public spending on health from 0.95% of the GDP to 2.5% by 2024.
2. While public outlays should focus on primary health care at the panchayat and municipality levels, private players should be relied on for speciality healthcare. The commission has recommended steps to fix the skewed availability of healthcare across India as poorer States have the worst facilities.



3. The 15th Finance Commission recommended substantial improvements in the working conditions for doctors in government hospitals, many of whom are hired on a contract basis by the States, and the creation of an Indian Medical Service cadre as envisaged in the Civil Services Act, 1951.
4. To achieve better healthcare parameters, public-private partnerships must be considered “in a holistic way” instead of the current situation where the government only turned to the private sector in times of emergency.

## Thriving in a crowd

### GS III: Conservation, Environmental Pollution and Degradation

Japan-inspired Miyawaki forests emerge as a popular solution to restoring degraded habitats in India. Chennai plans to add 10 this year.

#### Miyawaki method

The ranks of green cover advocates who follow the Miyawaki technique — a method of sowing very young seedlings close together in small plots of land, to create a forest within 25-30 years — are growing by the day. Named after the Japanese botanist and academic Akiro Miyawaki, the method has found favour among those who want to restore vegetation on degraded land within a short term.

A natural forest takes 100 years to grow. But in the Miyawaki method, where plants compete for sunlight and therefore tend to grow upwards faster than sideways, we get the same result in around 20-25 years. It will be a reasonably grown forest within 5-10 years, so it is possible for us to see them take shape in our lifetime.

Some of the enthusiasm may also be partly due to the fact that India is a party to the pledge in 2015 made to the United Nations Framework Convention on Climate Change (UNFCCC) to restore the green cover of 33% of its geographical area by 2022 (only 24% is reportedly covered at present).

#### Significant:

The method is significant for urban areas for pollution abatement, aesthetics and livelihood. In rural areas, it can generate profit for small farmers and landless labourers. The method requires only micro, mini scale plots to create dense vegetation.



## Taking root

Over the past few years, Miyawaki forest projects have been literally springing up all over the country, thanks to Municipal authorities and environmentalists who seemed to have found merit in this method.

## Localization

The Telangana State Government is experimenting with a version of Miyawaki through the 'Yadadri' method of dense plantation with no definite spacing between the saplings, which has shown good results in Warangal. In Tamil Nadu, green warriors are trying to evolve a backyard forest model that will be an income generator for small-scale farmers while rejuvenating local ecology.

## Conditional sustainability

Despite the high success rate, many ecologists have reservations about its sustainability in Indian climes.

## For public good

The Miyawaki method is not ideal for those looking to grow trees for timber or fruit within a short period. Miyawaki afforestation should be carried out on public land so that it is beneficial to everyone. We avoid planting trees with commercial value.

Regular exposure to forest-type environments improves health parameters like blood pressure and heartbeat. It has been scientifically proven that when you have green spaces, automatically your mood and spiritual health improves.